

WHAT IS CLAIMED IS:

- 1 1. A system comprising:
 - 2 a first data processor having an input data port, and an output control port;
 - 3 a memory having a data port to provide output data;
 - 4 a first bit access controller having an input data port coupled to the output data port of the
 - 5 memory, an input control port coupled to the output control port and an output data
 - 6 port coupled to the input data port of the first data processor, the first bit manipulator
 - 7 further including:
 - 8 a plurality of storage locations coupled to the input data port of the first bit
 - 9 manipulator, wherein each storage location stores data having N bit locations
 - 10 including a first bit and a last bit; and
 - 11 a bit shift module having an input port coupled to the plurality of line storage
 - 12 locations, and an output port coupled to the input data port of the first data
 - 13 processor, the shifter to provide at its output shifted bit values that are shifted
 - 14 relative to their storage location within the plurality of line storage locations,
 - 15 wherein the shifted bit values are shifted based on a value received at the
 - 16 input control port.
- 1 2. The system of claim 1 wherein the plurality of storage locations are part of a circular buffer.
- 1 3. The system of claim 2, wherein the circular buffer is used to form a first in first out buffer.
- 1 4. The system of claim 1, wherein the plurality of storage locations are part of a first in first out
- 2 buffer.

- 1 5. The system of claim 1 further comprising a memory control portion having a first control
2 port coupled to a control port of the bit manipulator, and a second control port coupled to a
3 control port of the memory, wherein the memory control portion requests data from memory
4 to be stored in the plurality of storage locations.
- 1 6. The system of claim 5 further comprising a watermark storage location to store a value to
2 indicate the memory control portion is to request data from memory.
- 1 7. The system of claim 1 wherein the first data processor further comprises a general purpose
2 processor.
- 1 8. The system of claim 7, wherein the general data processor includes a RISC type processor.
- 1 9. The system of claim 8, wherein the RISC type processor includes a MIPS based processor.
- 1 10. The system of claim 9 further comprising a video processor, wherein the video processor is
2 separate from the first data processor.
- 1 11. The system of claim 9, wherein the video processor includes a video transcoder.
- 1 12. The system of claim 1 further comprising a storage location coupled to the first bit access
2 controller to store a value indicating an amount of valid data stored in the plurality of storage
3 locations.

- | Year | Country | Population | Area | Population Density | Area Density | Population Density | Area Density |
|------|---------------------|-------------|------------|--------------------|--------------|--------------------|--------------|
| 1950 | USA | 150,000,000 | 3,600,000 | 41.7 | 13.3 | 13.3 | 13.3 |
| 1950 | USSR | 160,000,000 | 17,000,000 | 9.4 | 13.3 | 13.3 | 13.3 |
| 1950 | China | 550,000,000 | 9,600,000 | 57.3 | 13.3 | 13.3 | 13.3 |
| 1950 | India | 360,000,000 | 3,300,000 | 109.1 | 13.3 | 13.3 | 13.3 |
| 1950 | Japan | 90,000,000 | 378,000 | 238.1 | 13.3 | 13.3 | 13.3 |
| 1950 | France | 45,000,000 | 640,000 | 70.3 | 13.3 | 13.3 | 13.3 |
| 1950 | Germany | 50,000,000 | 357,000 | 140.1 | 13.3 | 13.3 | 13.3 |
| 1950 | Italy | 45,000,000 | 301,000 | 149.5 | 13.3 | 13.3 | 13.3 |
| 1950 | UK | 50,000,000 | 244,000 | 205.0 | 13.3 | 13.3 | 13.3 |
| 1950 | Canada | 20,000,000 | 9,970,000 | 2.0 | 13.3 | 13.3 | 13.3 |
| 1950 | Australia | 10,000,000 | 7,740,000 | 1.3 | 13.3 | 13.3 | 13.3 |
| 1950 | South Africa | 10,000,000 | 1,220,000 | 8.2 | 13.3 | 13.3 | 13.3 |
| 1950 | Argentina | 15,000,000 | 2,780,000 | 5.4 | 13.3 | 13.3 | 13.3 |
| 1950 | Brazil | 70,000,000 | 8,510,000 | 8.2 | 13.3 | 13.3 | 13.3 |
| 1950 | Mexico | 20,000,000 | 1,970,000 | 10.2 | 13.3 | 13.3 | 13.3 |
| 1950 | Colombia | 10,000,000 | 1,100,000 | 9.1 | 13.3 | 13.3 | 13.3 |
| 1950 | Venezuela | 10,000,000 | 916,000 | 10.9 | 13.3 | 13.3 | 13.3 |
| 1950 | Peru | 15,000,000 | 1,285,000 | 11.7 | 13.3 | 13.3 | 13.3 |
| 1950 | Ecuador | 5,000,000 | 283,000 | 17.7 | 13.3 | 13.3 | 13.3 |
| 1950 | Guatemala | 5,000,000 | 109,000 | 45.9 | 13.3 | 13.3 | 13.3 |
| 1950 | Honduras | 2,000,000 | 111,000 | 18.0 | 13.3 | 13.3 | 13.3 |
| 1950 | Nicaragua | 1,500,000 | 130,000 | 11.5 | 13.3 | 13.3 | 13.3 |
| 1950 | Costa Rica | 1,000,000 | 51,000 | 19.6 | 13.3 | 13.3 | 13.3 |
| 1950 | Panama | 1,000,000 | 75,000 | 13.3 | 13.3 | 13.3 | 13.3 |
| 1950 | Cuba | 7,000,000 | 110,000 | 63.6 | 13.3 | 13.3 | 13.3 |
| 1950 | Dominican Republic | 2,000,000 | 76,000 | 26.3 | 13.3 | 13.3 | 13.3 |
| 1950 | Haiti | 2,000,000 | 77,000 | 26.0 | 13.3 | 13.3 | 13.3 |
| 1950 | Jamaica | 1,000,000 | 10,900 | 91.7 | 13.3 | 13.3 | 13.3 |
| 1950 | Trinidad and Tobago | 1,000,000 | 944,000 | 1.1 | 13.3 | 13.3 | 13.3 |
| 1950 | Guyana | 1,000,000 | 215,000 | 4.7 | 13.3 | 13.3 | 13.3 |
| 1950 | Suriname | 1,000,000 | 163,000 | 6.1 | 13.3 | 13.3 | 13.3 |
| 1950 | French Guiana | 1,000,000 | 83,000 | 12.0 | 13.3 | 13.3 | 13.3 |
| 1950 | Guadeloupe | 1,000,000 | 1,600 | 625.0 | 13.3 | 13.3 | 13.3 |
| 1950 | Martinique | 1,000,000 | 1,260 | 793.7 | 13.3 | 13.3 | 13.3 |
| 1950 | Reunion | 1,000,000 | 2,500 | 400.0 | 13.3 | 13.3 | 13.3 |
| 1950 | Mayotte | 1,000,000 | 370 | 2702.7 | 13.3 | 13.3 | 13.3 |
| 1950 | Comoros | 1,000,000 | 2,235 | 447.4 | 13.3 | 13.3 | 13.3 |
| 1950 | Madagascar | 1,000,000 | 59,000 | 16.9 | 13.3 | 13.3 | 13.3 |
| 1950 | Mauritius | 1,000,000 | 2,400 | 416.7 | 13.3 | 13.3 | 13.3 |
| 1950 | Maldives | 1,000,000 | 298 | 3355.7 | 13.3 | 13.3 | 13.3 |
| 1950 | Malaysia | 1,000,000 | 330,845 | 3.0 | 13.3 | 13.3 | 13.3 |
| 1950 | Indonesia | 1,000,000 | 1,904,569 | 0.5 | 13.3 | 13.3 | 13.3 |
| 1950 | Philippines | 1,000,000 | 300,000 | 3.3 | 13.3 | 13.3 | 13.3 |

1 16. A method comprising the steps of:
 2 loading a plurality of data words into a storage location based upon a data request by a data
 3 processor;
 4 when in a first mode of operation receiving an indicator from the data processor to
 5 implement a get_bits request; providing data from the storage location in response
 6 receiving the indicator from the data processor.

1 17. The method of claim 16, wherein the step of providing further includes implementing the
 2 get_bits in hardware.

18. The method of claim 16, wherein the step of providing further includes user selectively
 implementing one of one-filling and zero filling.

19. The method of claim 16, further comprising the step of:
 when in a second mode of operation the indicator from the data processor is to implement a
 Huffman decode.

- 1 20. A method of using a general purpose data processor to access a portion of data bits of a
2 plurality of data bits, the method comprising the steps of:
3 providing a first request for N data bits to a bit controller, the bit controller being separate
4 from the general purpose data processor, where the first bit of the N data bits is not
5 aligned on a byte boundary;
6 receiving the N data bits from the bit controller;
7 determining at the general purpose data processor if M data bits are available from the bit
8 controller;
9 when the M data bits are available from the controller providing a second request for M data
10 bits to the bit controller.
- 11 21. The method of claim 20 wherein the step of determining includes accessing a register
12 associated with the bit controller to determine if M data bits are available.
- 13 22. The method of claim 20 further comprising the steps of:
14 receiving an interrupt indicating an amount of data used by the bit controller;
15 modifying an indicator based upon the interrupt, wherein the indicator is used during the
16 step of determining to determine if M data bits are available.